

Claims

1. (Original) A method of simulating a circuit, comprising:
reading a description of the circuit that includes a list of components in the circuit and the interconnections between the components, the circuit including both a first set of nodes and components responsive to time-domain signals and a second set of nodes and components responsive to time-frequency domain signals; and
in a single simulation flow, simulating time-domain representations of signals on the first set of nodes and simulating time-frequency domain representations of signals on the second set of nodes.
2. (Currently amended) The method of claim 1, further ~~including~~comprising:
partitioning the circuit into at least one partition including one or more nodes and components from the first set and at least one partition including one or more nodes and components from the second set.
3. (Original) The method of claim 2, wherein the time-domain representations of signals are analog signals included in at least one analog partition and the time-frequency domain representations of signals are RF signals included in at least one RF partition and wherein a solution for simulation of the analog partition affects a solution for simulation of the RF partition.
4. (Currently amended) The method of claim 1, further ~~including~~comprising receiving user input controlling how to partition the circuit and automatically refining the partitions to provide a higher probability of convergence.
5. (Currently amended) The method of claim 1, further ~~including~~comprising partitioning the circuit based on user input and automatically sub-partitioning the circuit to increase simulation speed.

6. (Currently amended) The method of claim 1, wherein simulating ~~includes~~comprises solving each of the partitions separately and performing relaxations over all of the solved partitions.

7. (Currently amended) The method of claim 1, further ~~including~~comprising:
partitioning the circuit into separate modules coupled together, with each module being associated with at least one boundary node external to the module;
positioning a boundary node by specifying the boundary node to a fixed value or spectrum; and
solving a partitioned module using the fixed value or spectrum assigned to the positioned boundary node.

8. (Original) The method of claim 1, wherein the time-domain representation of a signal is given by $V(t)$ and the time-frequency domain representation of a signal is given by

$$v(t) = \sum_{k=-K}^K V_K(t) e^{j\omega_k(t)t}.$$

9. (Currently amended) The method of claim 1, further ~~including~~comprising receiving, on a server computer, the description from a client computer over a distributed network, simulating the description on the server computer, and returning results to the client computer over the distributed network.

10. (Currently amended) The method of claim 1, wherein simulating ~~includes~~comprises solving analog and RF partitions for each time step H, and wherein the time step H is automatically adjusted based on the simulation results of previous time steps and input stimuli.

11. (Original) A simulator for simulating a circuit, comprising:
a single simulator kernel including:
a) an analog solver simulating a first set of circuit nodes and components using time-domain representations of signals; and

b) an RF solver simulating a second set of circuit nodes and components using time-frequency domain representations of signals.

12. (Currently amended) The simulator of claim 11, further ~~including~~comprising an input to read a netlist describing the physical characteristics of the circuit.

13. (Currently amended) The simulator of claim 11, further ~~including~~comprising an input to receive control statements from a user to partition the circuit.

14. (Currently amended) The simulator of claim 11, further ~~including~~comprising a partitioner to partition the first and second set of nodes and components into modules based on user input and to automatically sub-partition the modules to encourage convergence.

15. (Currently amended) The simulator of claim 11, further ~~including~~comprising a relaxation tester coupled to the analog and RF solvers to perform one-step relaxation on results provided by the solvers.

16. (Currently amended) The simulator of claim 11, further ~~including~~comprising an input to read an analog database and an RF database.

17. (Currently amended) A system for simulating a circuit, comprising:
means for reading a description of the circuit that ~~includes~~comprises a list of components in the circuit and the interconnections between the components, the circuit ~~including~~comprising both a first set of nodes and components responsive to time-domain signals and a second set of nodes and components responsive to time-frequency domain signals; and
means for simulating, in a single simulation flow, the first set of nodes using time-domain representations of signals and the second set of nodes using time-frequency domain representations of signals.

18. (Currently amended) The system of claim 17, further ~~including~~comprising a network and wherein the ~~netlist~~list is read from a client computer coupled to the network and the means for simulating includes a server computer coupled to the network.

19. (Currently amended) The system of claim 17, further ~~including~~comprising means for partitioning based on user input and means for automatically sub-partitioning the circuit to provide a higher probability of convergence or to improve simulation speed.

20. (Currently amended) The system of claim 17, further ~~including~~comprising analog solving means and RF solving means within a single simulator kernel.